PAWNEE HEALTH CENTER

PAWNEE, OKLAHOMA

POST OCCUPANCY EVALUATION

Office of Environmental Health and Engineering

Indian Health Service

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INTRODUCTION/OVERVIEW

This report is part of the Post Occupancy Evaluation Program consisting of surveys and reports of recently completed Indian Health Service (IHS) funded health facilities. The purpose of the program is to aid in the planning, design, construction, and operation of future IHS funded facilities. This is accomplished by identifying desirable and undesirable features along with lessons learned during the planning, design and construction process and by making this information available to other offices that plan, design and construct health facilities.

PURPOSE OF POST OCCUPANCY EVALUATION/SURVEY TEAM

The Post Occupancy Evaluation (POE) is a survey and analysis of a recently completed and occupied health facility. The specific purposes of making such an evaluation include:

- Avoiding repetitious design or construction deficiencies and verifying that functional requirements of the program are met at reasonable costs.

- Documenting noteworthy construction feature or practices for inclusion in future projects.

- Noting staffing patterns and comparing the adequacy of space provided within the original Program Information Documents. The team also evaluates the planning, design, construction, and initial operation process, to highlight successful and unsuccessful features.

The main effect of the report is to provide feedback to those offices responsible for the planning, designing, constructing and operating health facilities funded by the IHS. The ultimate goal is to save future construction and operating costs by contributing to an efficient facilities design and construction program. The POE Report advises the IHS Health Facilities Advisory Committee (HFAC) of the significant concerns and findings which, after comprehensive review, may lead to health care facilities criteria revisions. The findings and recommendations or “lessons learned” of the POE report will be placed on the OEHE website for use by interested health facilities planning, design and construction offices.

The field survey of the Pawnee Health Center (PHC) commenced on September 19, 2006 and continued for 3 days through September 21, 2006.

The following individuals participated as members of the POE team and prepared this report. Together with comments and background information was also furnished by Frank Martin and Ray Cooke IHS/HQE.

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PROJECT DEVELOPMENT MILESTONES AND COMMENTARY

Planning

Program Justification Document approved: February 22, 1995
Program of Requirements approved: June 8, 2001

Funding and Schedule History			Tribal Shares
FY 01	$1,741,161	+	$25,912
FY 02	$5,000,000	+	$10,332
FY 03	$12,550,886	+	$10,332
Total	$19,338,623		

The design and construction of the PHC was procured through a P.L. 93-638 contract between the Division of Engineering Services and the Pawnee Tribe. Actual building construction started on May 2, 2002 with groundbreaking activities.

Size: 6 132 square meters (approximate)

Total Project Costs: $19,338,623

As-Built Drawings: As-built drawings are available in the Facilities Manager’s office onsite and are maintained and updated as necessary.

ARCHITECTURAL

I. Building Orientation

A. The PHC provides inpatient diagnostic and ambulatory care and is located in the southeast section of the 646 acre Pawnee Tribal Reserve just east of the town of Pawnee in north central Oklahoma. The PHC is the administrative center for the Pawnee Service Unit and is under the jurisdiction of the Oklahoma City Area IHS Office.

B. The Pawnee Tribal Reserve is accessible from the intersection of U.S. Highway 64 and Oklahoma State Highway 18 (at the center of Pawnee, Oklahoma) via east bound Harrison Street. The Tribal Reserve's entrance is five hundred meters west of that intersection, where Harrison Street becomes Agency Road at its intersection with Morris Road. After entering the Reserve, Agency Road curves to the southeast and, after 150 meters, becomes Heritage Road (formerly Click Field Road). Heritage Road then quickly transitions to Heritage Circle, which loops around the PHC. A divided entry at the southeast portion of the Heritage Drive loop leads to the main parking area along with a covered drop-off area at the clinic's main entrance [Picture A-1], which is located at the center of the building's southeast elevation. The main entry is oriented to the southeast.

C. The emergency entrance is located on the northeast side of the building. The loading dock is located on lower level of the building's the northwest side.

D. All entries (including the main entrance and emergency entrance) have vestibules to reduce heat loss, air infiltration, and the effects of blowing snow, rain, dirt and dust.

E. During the peak periods of use observed while conducting the POE there appeared to be sufficient patient parking, primarily provided just east of the main entrance [3 handicapped spaces and 50 regular spaces]. An additional 22 adjacent spaces are located just outside the emergency entrance near the northeast/side elevation, along with 124 [6 handicapped and 118 regular] spaces in the lower level/staff parking lot just north of the clinic.

F. The placement of the building on a bluff accommodated a design clearly separating the common public areas on the upper level from the mechanical and staff/restricted areas located on the lower walk-out level.

II. Exterior Features

A. General Observations/Design Criteria

1. The Pawnee Health Care Center is a two-story facility. The ambulatory care clinics (primary, dental, eye, audiology, physical therapy, social work, mental and environmental health), administrative offices, and support functions are located on the upper level first floor and are directly accessible from the main parking lot. The facilities management offices, information technology (IT), mechanical spaces, and the employee lounge/exercise room are located on the lower level which is on grade with the employee parking lot.

2. There are no surgery suites or facilities for services other than outpatient care. If inpatient services are required, patients are typically sent to the local Pawnee city hospital or to Tulsa, OK public hospitals 98 km east. The nearest IHS hospitals are located in Claremore 150 km east, Ada 215 km south, and Tahlequah 250 km east.

3. The main entry's drop-off area and the emergency entrance, as well as all secondary exits/ entries, are covered to protect patients, visitors and staff from the weather.

4. The emergency entry is not adjacent to the clinic. Emergency traffic is required to travel 40+ meters from the emergency entry on the northeast elevation, past the dental/medical records/audiology/eye clinic, through the main corridor, and either through or past the pharmacy to the primary care clinic.

5. The twin-gabled roof atop the clinic's long horizontal building form blends architecturally with the other nearby Pawnee Tribal Reserve buildings. The exterior walls of the building are a combination of:

    a) an insulated reinforced acrylic finish panel system (Exterior Insulation and Finish System, or EIFS panels) over gypsum sheathing board attached to steel studs; and
    b) random patterned light colored stone veneer blocks over gypsum sheathing attached to steel studs [Picture A-2]; and
    c) hollow metal doors and aluminum windows with low-E glazing;
    d) small round aluminum windows (ranging from one to five single windows) in the clinic's gabled ends [Picture A-2].

6. The HCC roofs are a combination of flat and pitched roofs [Picture A-3]. The flat roofs are constructed of a flat TPO (thermoplastic polyolefin) synthetic membrane over rigid insulation, gypsum wallboard sheathing, metal decking and structural steel members. The pitched roofs are composed of manufactured standing seam metal roof panels over underlayment, rigid insulation, vapor barrier, metal decking and structural steel members. Transition knee walls (of varying heights) between the flat and pitched roof areas were constructed by extending the TPO synthetic roofing membrane up the vertical wall ending with a termination bar below metal roof's fascia or an EIFS panel. Two long skylights [Picture A-4] brighten the interior's main southeast/northwest corridor. There is an interstitial space between the roof's structure and the acoustical ceiling system below for mechanical equipment, ductwork, and electrical and electronic data wiring systems [Picture A-5].

7. The building has been thoroughly landscaped, especially near the front entry. Extensive plantings were also made along the eastern half of the front elevation, the entire northeast side elevation, and throughout both employee and visitor/patient parking lots. Numerous additional trees have been planted alongside the clinic ring road and in other open areas around the clinic.

8. Building Signage/Identification: A main monument (lighted) identification sign for the health center is located where Heritage Road (formerly Click Field Road) transitions to Heritage Circle at the southwestern part of the site. This sign directs visitors to either the Patient/Visitors Entrance and parking lot, or the Loading Dock, Staff Parking and Government Vehicle [GSA parking. There is another monument sign at the clinic's divided entry from Heritage Circle at the front (southeastern) elevation. Directional signage at the two entries to the staff parking lot locations from the Heritage Circle ring road indicate the loading dock's location. There are no signs directing arriving patients to the emergency entry.

9. Exterior lighting of the main, emergency entrance and other exit doors from the building is provided for normal nighttime conditions, and there is sufficient lighting in the vehicular approaches, parking lots and pedestrian walks leading to the clinic. Staggered exterior light fixtures are mounted above some of the main floor windows.

B. Specific Features/Findings

1. Since completion of construction, the EIFS exterior wall system appears to have provided adequate protection from the elements, though its durability will not match that of the masonry over the long term. Additionally, the EIFS material and has suffered staining from dirt splashing during rain storms and is difficult to clean (must be re-painted).

2. The two-story design generally utilizes a 9 meter by 9 meter structural grid, with a larger 14.5 meter x 9 meter grid on the central southwest/northeast axis and a 9 meter x 11.75 meter grid on the central northwest/southeast axis.

3. The covered drop-off area at the main entry's porte cochere is paved with scored, broom-finished concrete, and features an open pedestrian plaza with bench seats just to the southwest. The plaza contains a memorial with three flag poles, native boulders, plantings and a low monument with tribal seals from the local tribes (Iowa, Kaw, Osage, Otoe, Pawnee, Ponca, Sac & Fox and Tonkawa) that receive services at this facility [Picture A-6], creating a meaningful entry recognizing the clinic's local Native American user population. The building's protected main entrance area is a glass curtain wall that projects a welcoming feeling to arriving patients and visitors.

4. The emergency entrance provides some protection from the weather, but emergency patient/worker pedestrian traffic is exposed to the weather between that entrance and the parking lot.

5. Although almost all emergency traffic arrives at the PHC via local ambulance service (whose crews already know where that emergency entrance is located), there is no site signage directing traffic to the emergency entrance on the Northeast elevation.

6. Storm water does not readily drain away from the building:

    a) along the front elevation's southwestern wall near the main entrance;
    b) along both sides of the front elevation's east corner; and
    c) along the southwest elevation;

    Storm water tends to pool in front of the primary clinic and both sides of the front elevation's eastern corner, and drains back toward the building's southwestern elevation. The finish grade at the front elevation's eastern corner extends above the bottom of the wall panel system and covers up the masonry weep holes in that area.

The finish grade along most of the clinic's southwestern elevation directs water back toward the building and covers up all the masonry weep holes.

7. The roof/wall flashing has been and is leaking at multiple locations. That flashing was poorly installed and/or the installation poorly coordinated, at:

    a) several points of intersection of the metal roof and the wall system, and still appears to be a problem despite multiple marginal repair attempts [Picture A-7]; and
    b) at the vent penetrations along the roof knee wall; and
    c) at the intersection of the shed skylight and both the wall and the flat roof's membrane system [Picture A-8];

    The flashing in these areas has been problematic despite multiple/on-going repair efforts. Per the drawings (Detail No. 13, Sheet A3.21a) the flashing was the responsibility of the skylight manufacturer, but additionally it is the general contractor's responsibility to ensure installation per the contract documents and to ensure appropriate coordination among all suppliers and subcontractors;

8. The placement of the building (with the main entry oriented to the southeast) shields the entrance from cold winter winds out of the northwest, and exposes the long southeast elevation to favorable sun exposures throughout the year. Entry from the (south) east is also in keeping with Pawnee tradition. While the loading dock's and lower level entries' northeast orientation keeps them visually clear of the public entrance, they also increase the potential for air infiltration during the winter season.

9. The PHC's southwest elevation is the initial view of the building upon entering the site, and the rounded form at that elevation's midsection is an attractive expression of the second floor's secondary southeast/northwest corridors/southwestern stairwell. The prominent placement of 'Pawnee Health Center' at the top of that rounded form clearly conveys the clinic name to visitors.

C. Comments/Recommendations

1. The exterior wall system appears to have performed well and is attractive in color and appearance, and is suitable for IHS health facilities. However, while the initial cost of the thin coat exterior insulating and finish system panel's initial cost is relatively low, the long term viability is inferior to the masonry material also installed on this building.

2. The design is successful in terms of materials selections for the roof and heights from floor to structure. These could be used as a reference for any future health facility. Both the standing seam metal roof and the membrane system on the flat areas of the roof have performed well with minimal problems to date. The most critical factor in the successful performance of any type of roof is the contractor quality control and careful inspection during installation. It is recommended that a representative of the roofing manufacturer always be present during construction of the roofing system (including deck).

3. Storm water drainage away from the building would have been improved had the finish floor elevations of the main and lower levels been set a few inches higher. Although storm water does not flow freely away from both sides of the east corner, from between the small pedestrian plaza at the main entrance and the structure, and along much of the southwest elevation, there is sufficient slope to the site to remedy this issue as follows:

    a) once the grade level near both sides of the clinic's eastern corner is lowered to a minimum of 6" below the top of the foundation, drains should be installed in the planting beds, with drainpipes leading to daylight beyond the rear, north corner of the building;
    b) the existing shallow swale that runs northeast to southwest outside the primary care clinic along the front elevation should be widened and extended to the southwest;
    c) a swale should be cut parallel to and a sufficient distance beyond the southwest elevation in order to promote storm water drainage away from the building into the open area to the southwest part of the site.

4. Coordination of flashing installation was problematic and/or deficient at:

    a) the intersection of the metal roof and the wall system (and is still a problem despite multiple repair attempts);
    b) the vent penetrations along the roof knee wall; and
    c) various intersections of the shed skylight and the wall and the flat roof's membrane system.

   Per the drawings (Detail No. 13, Sheet A3.21a) the flashing was the responsibility of the skylight manufacturer, but it is the general contractor's responsibility to ensure proper coordination among all suppliers and subcontractors.

5. This is a successful design in terms of exterior and interior way-finding signage and would be suitable for any future health facility. Additional exterior site signage for emergency services and inside the main entry for patient registration would be helpful. The exterior signs are very simple (made of painted aluminum panels mounted on a low, split-faced concrete masonry block base) and are of a lesser quality than might be expected for this type of facility.

III. Functional Relationships and Traffic Patterns

A. General Observations/Design Criteria

1. The central plant, facility maintenance offices and loading dock are located on the northwest side of the building on the clinic's lower level; the staff entrance is located at the center of the lower level (just northeast of the loading dock).

2. This is a successful design in terms of interdepartmental relationships and patient and staff flow patterns, although considerable conflicts could arise between emergency services traffic and everyday staff/patient/visitor traffic between the emergency entrance and the primary care clinic. (NOTE: The A/E placed the clinic on the building's southwest end in order to accommodate possible future expansion; this decision precluded placing the emergency entrance closer to the primary care clinic.)

3. The layout of the building is simple and the departments are logically related and easy to find. All patient functions are simply organized and are oriented off of the first floor's main interior corridor, and patients and visitors can typically find their destination easily.

4. The potential for future expansion of the primary clinic (to the open area of the site just southwest of the building) was the rationale for locating the clinic at the building's south corner. The rational placement of the clinic's longitudinal spine along the site's soil contours automatically led to the placement of the upper level's visitor/patient surface parking lots – and the emergency entrance - at the opposite, eastern ends of the PHC. Therefore, while the proximity of the primary care clinic to the emergency entrance is greater than would normally be preferred, the decision to prioritize the clinic's possible future expansion overrode concerns about the clinic's distance from the emergency exit.

5. There are some minor staff concerns with patient flow across secondary hallways (between the primary care clinic and the laboratory and the radiology departments), and some staff attempt to pass through Medical Records on the way to and from the Community Health and Social Services departments. This appears to have been remedied by management's directive for staff to not cut through departments.

6. Although some departments commented on lack of storage space storage space, in general storage appeared to be adequate. However, because many staff members store their personal items (coats, purses, etc.) in their departments (rather than utilizing the employee lockers located on the lower level, most departments suffer from a lack of space for that purpose.

   Also, because there is no dedicated eating area for staff members on the first floor, some employees choose to eat their lunch/snacks at/near their desks in their departments. While the staff lounge and locker area would ideally be accessible from nearby work areas, the current arrangement could be made more workable if management policy emphasized the use of lockers for personal items. However, future facilities might do well to provide small storage spaces for purses, umbrellas and other small personal items in each department (especially in the primary care clinic).

7. The Social Services and Community Health departments commented on the small size of their conference rooms. Although the rooms are narrow, installation of smaller (narrower) tables and re-location of any bookcases or other furnishings currently located on side walls should help alleviate overcrowding.

8. The original design called for the use of decentralized waiting areas in the clinical spaces. This has not worked resulting in many of the sub waiting areas not being used and the main waiting area in front becoming crowded and too small.

B. Comments/Recommendations

1. The simple yet logical layout of the building makes all departments readily easy for patients and visitors to locate. This concept could easily be applied to future facilities of like size within the IHS.

2. In future facilities, planning for the possible location of security cameras, use of non-operable windows, alarms on doors and manned security posts for low visibility areas, etc. will help address security concerns.

3. An information desk would be helpful in assisting patient/visitor traffic to the hospital.

4. The primary care clinic space was substantially changes to reduce the number of patient no shows and long wait times. Changes included:

    a) Implementing the use of a telephone triage appointment system
    b) Converting nursing offices into exam rooms
    c) Consolidation of two small waiting areas into primary care space

IV. Interior Features (General)

A. General Observations/Design Criteria

1. Interior public spaces are generally somewhat tight in size but are well maintained. There is traditional artwork displayed in the main (southeast/northwest) public.

2. Skylights located over the main corridor provide an airy, pleasing quality of natural light that is “non-institutional” in character.

3. Modular systems furniture is used in most office areas and appears to be in excellent condition. Typically, executives and supervisors have walled offices.

4. The floor and wall surfaces in the interior plaza, the main corridors, public rest rooms, etc. are a hard surface, typical for hospitals and clinics to facilitate cleaning and are generally in excellent condition.

5. The finish hardware is generally in excellent condition.

6. Many staff complained about the heating and air-conditioning – temperature, noise, etc,.

7. Acoustical Privacy

    a) Offices
    b) There is a lack of acoustical privacy at the two patient registration counters. Design and installation of attractive sound partitions would help address privacy concerns.

8. Space in lower level hallway appeared to be non functional.

9. IT – main office space too large; need more space in ‘workroom’ (separate storage area).

10. Behavioral Health – need larger waiting area and/or separate ‘holding’/waiting area for agitated patients; also need a conference room.

11. Throughout the facility, primarily in the waiting areas, stem walls have been capped with Corian solid finish material that has been cut to fit without any relief on the finished cut. The resulting edge is knife like and presents a safety hazard. This can be mitigated by rounding over the edge with a router or sanding block. Also, most of the Corian caps appear to be directly attached to the underlying metal stud structure rather than being glued to an intermediate layer of plywood, which in turn would be screwed to the metal studs.

12. Floors and finishes throughout the facility, including high traffic areas, appeared to be very well cared for and the efforts of housekeeping and maintenance to keep this facility in a new condition are to be commended.

B. Comments/Recommendations

1. This is a successful design in terms of interdepartmental relationships and patient and staff flow patterns. The layout of the building is readily comprehended, and departments are logically related and for the most part easy to find. The general flow pattern would be suitable for any future health facility.

2. Sharing of lab and x-ray waiting space and reception has worked out well. Ideally, patients would not need to re-enter public corridors/waiting areas when traveling from the primary care clinic to the lab or x-ray departments.

3. While gypsum board with paint or a wall covering is commonplace for use in corridors in most IHS facilities, plaster would be a better solution related to cleaning, maintenance and repair and should be considered in the value engineering process in future projects.

4. The floor surfaces and wall surfaces are easily maintained and appear to be appropriate choices for the use.

5. Waiting rooms, corridors, etc. are well lit in this facility, either by natural light or electrically. Additionally, designers must plan for the waiting rooms to be within proximity to the departments they serve and easily supervised by nursing, support staff or closed circuit security monitoring.

6. This is a successful design in terms of interdepartmental relationships and patient and staff flow patterns. The departments are logically related and (for the most part) easy to find. The general flow pattern would be suitable for any future health facility.

7. There is no security presence at the front entry, and the front waiting area seating is minimal and isolated. Traffic at the two patient registration counters is controlled by a rope and pole system. The counters are not continuously staffed, and with no other initial staff reception (other than the adjacent pharmacy), some first-time patients and visitors might experience minor confusion upon entering the facility. Directional/ informational signage and/or assignment of security/reception personnel near the front entrance might help address that situation at the PHC.

8. Lack of storage space: due to initial programmed eventual adoption of electronic filing in IHS will address some of these concerns, but it should determined if there is a need for additional storage space or facilities to be programmed into the HSP.

9. Card access is appropriate in today’s security conscience environment and although relatively expensive to install initially, is appropriate. It is easily controlled via computer. In future facilities, card access should be included for the appropriate areas. However, care must be taken to place all doors operated by card access on the emergency generator system, as these doors will unlock in the case of power failure.

10. Space for closed circuit security and monitoring needs to be included in all future IHS facilities. All entrances, delivery areas, parking lots, etc. should be monitored by this system.

11. Consider re-designing the emergency room templates in the HSP to be able to treat urgent care patients separately from true emergency patients.

V. Staffing Summary

There are currently 28 fewer employees on duty than were projected at the time the PJD was developed. Some departments presently have significantly smaller staff than programmed. The RRM projection in the original PJD identified 143 FTE's; funded at 85% for a total of 121; currently 115 of these FTE's are staffed in the facility.

See Staffing Summary below for more specific detail.

Department	PJD RRM	Current
OEHE	9	8
Laboratory	3	2
Radiology-Diagnostic Imaging	1	1
Contract Health	12	13
Ambulatory Medical Services	18	17
Optometry	3	3
Community Health Services	15	3
Dental	20	11
Pharmacy	6	5
Physical Therapy	3	2
Administration	9	8
Medical Records	8	9
Business Office	6	8
Property and Supply	3	2
Nutrition	2	2
Housekeeping	6	9
Facility Maintenance	6	5
Clinical Engineering	1	0
Audiology	3	1
Behavioral Health	5	4
Information Technology	4	2
SUBTOTAL IHS	**143**	**115**

The gap in staffing is reflected in some areas which have much lower staffing than planned for such as community health and dental: health education staffing not hired, audiologist only recently hired and PT not fully staffed. Other departments are similar to recommended staffing with the exception of housekeeping that has 3 more FTE than projected.

VI. Comparison of Building Areas as Programmed and as Designed

NOTE: This building was programmed, designed, and constructed using Metric units of measurement.

See *Appendix A* for building area comparison.

VII. Architectural Summary

Generally, this is a well planned facility, although a number of minor problems were discovered and reported to the survey team and are documented herein. It is a good example of a facility this size in terms of layout and interdepartmental relationships.

Staff throughout the facility was active, energetic, enthusiastic and friendly projecting a positive impression of a great place to receive healthcare, to work and be a part of.

Way finding is particularly outstanding in this facility. In this respect, it is extremely “user friendly.” The signage is excellent without being gaudy and tasteless.

The materials selected by the architects place the facility in harmony with the building site’s surrounding natural colors and with commonly used local building material.

The cultural heritage of the Pawnee Tribe has been respected in the design and in turn is recognized by the patients, family, and community. Native American art is displayed in the building.

Specific recommendations are included in the “comments/recommendations” section under each department heading. Also, refer to the SUMMARY OF FINDINGS AND RECOMMENDATIONS at the end of this report.

CIVIL/STRUCTURAL

I. General

The Pawnee Health Center (PHC) is located on a 5.42 hectare site located on the Pawnee Tribal Reserve. The site is characterized by broad flat plains of Black Bear and Skedee Creeks interrupted with low rolling hills. The PHC contains 6397 square meters. The building structure consists of reinforced concrete footings, foundation walls and piers supporting a structural steel framing system. The structural design was essentially based on the 1987 Life Safety Code, NFPA 101, and the 1987 Uniform Building Code.

The Pawnee Tribal Utility Authority provides potable water service and sewage collection and treatment for the health center.

II. Site Drainage

A. General Observations

1. The west wall has a history of surface water infiltration problems. The ground contour slopes down into the west wall of the health center, causing precipitation runoff along the building foundation and ponding at the northwest employee entrance. The facility engineer installed a french drain and dug a drainage channel to channel the runoff away from the wall and employee entrance. The building contractor provided additional sealing along the base of the wall. Water infiltration has not been observed during subsequent rains.

2. The building construction contractor formed a 6-10 meter swale on the SW side of the hospital near the flagpoles. This swale is not shown on the record drawings. The Facility Engineer reports that heavy rain events cause standing water in the swale for as long as a week but the water does not cause the hospital undue lawn maintenance or mosquito concerns.

3. Finish grading is smooth and placement of sod is general good promoting proper routing of runoff and erosion control.

B. Recommendations

1. Design and Construction: Improved cut sheets and site inspection during rough and finish grading could have avoided grading errors at this site.

2. Remedial: Facility Engineer has made appropriate corrections. No additional modifications are recommended.

III. Parking Areas

A. General Observation

1. The PHC has 2 parking areas; the customer parking is located on the east side of the building adjacent to the front entrance and the employee parking on the west side of the building. The PHC POR called for 162 parking spaces; however, the record drawings show a total of 196. The record plans show that the west parking lot has 121 marked parking spaces with 22 GOV parking spaces enclosed in a secure fenced enclosure and 6 parking spaces dedicated to handicap parking. The plans show that the east parking lot has 75 parking spaces with 3 dedicated to handicap parking.

2. The original number of handicap parking spaces provided was based upon the ADA design requirements; however, three handicap parking spaces (over those shown on the plans) were added in the east parking lot due to the high demand seen for these spaces since the hospital's opening.

3. Each parking lot has two avenues of ingress/egress to the outer perimeter road which encircle the health center grounds. This design promotes smooth traffic flow and parking access. The parking spaces are adequately sized to accommodate standard passenger cars.

4. The asphalt pavement is in good condition with no potholes or abnormal cracking or settling. The layout of both parking lots contained a higher than average percentage of island space. Most of this island space contained landscaping features such as sod and trees. The islands help direct the flow of traffic, add to the facility aesthetics and can provide shade when the trees mature. However, they can sometimes be difficult for the grounds keeping crews to mow, trim and weed, especially when parked vehicles impinge upon their work areas.

5. During the week of the study, there was always ample parking. However, the Facility Engineer reports that the hospital staff must be occasionally reminded to park in the west parking lot so that there will be adequate customer parking near the hospital front entrance.

B. Recommendations

1. Design and Construction: Eliminating open soil or grass in parking islands by creating fewer islands, or by filling some of the islands with concrete, can decrease or eliminate hard to maintain areas for the grounds keeping crew.

2. Remedial: Facility Engineer has made appropriate corrections. No additional modifications are recommended.

IV. Solid Waste Collection and Disposal

A. Observations

1. A local private contractor provides solid waste collection and disposal service for the health center. The solid waste is disposed of at a certified landfill.

2. Four 4-yard solid waste containers occupy a parking space on the west parking lot next to the GOV enclosure. The containers are aligned in series. They are accessible only from one direction since two sides are blocked by curbing and one side can be blocked if a car utilizes the parking space. The solid waste contractor must pull out the front containers to gain access to the containers in the back. There is no security fence around the containers.

3. The weight bearing on the container wheels is creating 2-inch divots in the asphalt. Continued lifting and moving of these heavy metal containers will add more stress to the asphalt in this area, seriously degrading its condition over time.

4. Biomedical waste collection is contracted to a local company (Stericycle). The biomedical waste is stored inside the hospital. The facilities used to handle this type of waste were not evaluated.

B. Recommendations

1. Design and Construction: Include a suitable location for solid waste collection containers that includes design considerations such as: reasonable close proximity to building, ease of access for users, ease of access contractor collection truck, stable container storage platform and privacy/security fence.

2. Remedial: Construct a reinforced concrete platform for the solid waste containers in a more accessible location, perhaps on the island southwest of the GOV parking area.

V. Domestic Water Supply

A. Observations

The Pawnee Tribal Utility Authority (PTUA) provides water service to the Pawnee Health Center through a small water system dedicated primarily to the health center use.

The PTUA submits the required monthly and annual community water system reports to the EPA. The health center double-checks the water quality by performing routine coli form and residual chlorine testing.

The water provided to the health center is produced from a local well and pumped to a water standpipe approximately 120’ northeast of the health center. An altitude valve was installed by the Utility Authority to control the water level in the tank. Currently the altitude valve vault is almost filled with silt and the tip of the altitude valve bonnet barely protrudes the soil surface. It is obvious that the valve is not being maintained and is therefore stuck in the open position.

The Service Unit Environmental Engineer reports that the Utility Authority controls the water level in standpipe controlled manually. There are occasions when the tank overflows. At other times the standpipe water elevation may be low enough to affect pressure-assisted flush toilets (need minimum of 20 psi). When low pressure is observed within the health center, facility maintenance staff reports it to the Tribal Utility Authority. The Tribal Utility Authority will then turn on the well pump.

The Facility Engineer reported that a requisition has been prepared for a domestic water service booster pump. Once this pump is installed, it will be available on a standby basis to correct low pressure concerns that affect drinking water and toilet use. The Facility Engineer also indicated that a separate emergency water booster pump will be ordered soon to provide sufficient water pressure for the fire sprinkler system to operate as designed should the water level in the standpipe be below optimum elevation.

Health center water pressure was 50 psi midday at time of survey, indicating that the standpipe was nearly full.

There are reports of “black water” and hard water problems. The source of the black water is unknown. This black water may be generated by either pipe corrosion and/or by minerals, such as manganese, precipitating out of the community system supply water.

Three exterior fire hydrants are appropriately spaced and accessible locations around the health center.

The sprinkler system has a separate meter on it, a convenient design feature which encourages water use awareness and conservation.

B. Recommendations

1. Design and Construction: Include public water supply system reliability uncertainties into initial facility designs. Incorporate necessary water quality and fire suppression safeguards into facility water systems.

2. Remedial: It is recommended that the Facility Engineer investigate further into the cause(s) of the “black water” that is periodically observed. Once the black water source has been determined, appropriate changes can be made to treat the water or change the piping material to eliminate the formation conditions. The Facility Engineer is making appropriate facility improvements to address daily and emergency water pressure needs.

VI. Loading Dock and Receiving Area

A. Observations

There are two docks for loading and unloading of equipment and supplies into the health center. These docks, located on the east side of the facility, have well design approaches and loading platforms with wide access bays.

There are three roof drains that discharge directly onto the loading platform. This makes working on the platform very problematical for the workers when it rains. The health center has installed a downspout on one of the roof spouts, bringing the water point of discharge down to platform level.

This change has created a drier, protected corridor for the workers to unload supplies from the transport trucks while it is raining.

B. Recommendations

1. Design and Construction: Install proper roof guttering and drains to protect people on walkways and building entrances.

2. Remedial: It is recommended that downspouts be installed on the two remaining elevated roof drain discharge spouts, channeling the rain from rooftop to loading platform ground level.

VII. Pedestrian Walkways and Canopied Areas

A. Observations

The pedestrian walkways and canopied areas work well, providing convenient and weather protected pickup and drop-off car access.

B. Recommendations

No modifications are recommended.

VIII. General Building Exterior

A. Observations

Minor structural cracks were observed by the Facility Engineer on west wall where surface runoff infiltration was previously noted. The Facility Engineer marked them for future tracking and recorded the elevation with a survey level to track any future settlement.

B. Recommendations

No modifications are recommended.

IX. Record Drawings

A. Observations

Facility Engineer does not have much confidence in their accuracy with regards to location of buried water utilities. The Record Drawings do not reflect the grading along the west wall and the noted SW swale and only provides rough details on grading plans. Detail page (L6.00) that was supposed to show detailed grading plans close to the health center building was missing from the bound Record Drawing set provided to the Oklahoma City Area Office.

B. Recommendations

No modifications are recommended

MECHANICAL

I. General Observations

Although the principle focus of this evaluation is to identify lessons learned that might better guide future design and construction of similar facilities throughout the IHS there was an opportunity to observe and investigate issues specific to the facility.

II. Fire Protection/Sprinkler Pressure Systems

As the system is currently configured fire protection for the facility is not reliable. Fire and domestic water service is provided from a small (reportedly 120,000 gal) community storage tank located adjacent to the clinic [Picture A-9].

During the evaluation the tank overflow was observed to be actively discharging a full flow.

A. General Observations

1. Fill control of the tank was initially automated through float control and valve devices that are reportedly no longer functional.

2. Currently, the tank is filled when consumers, typically the clinic, report a loss of local system pressure and a water system operator from the tribal utility is mobilized to manually energize a pump to fill the tank.

3. The fill line is a one way supply and the entire line is pressurized from the pump during fill operation.

4. The clinic relies exclusively on pressure head from the water tank for both fire and domestic use.

5. Facility maintenance regularly records the supply pressure at the riser in the mechanical room. From a review of the logs a recorded pressure of 50 lbs on Friday can drop to a low pressure of 20 lbs on the following Monday.

6. At a supply pressure of 20 lbs it is unlikely that there is sufficient pressure head available to flow sprinkler heads on the first floor. In the most hydraulically remote portions of the building, and throughout the attic spaces, there may be insufficient pressure to even open the sprinkler heads in the event of fire.

7. A visual site line from the clinic roof suggests that roughly only half of the tank is available as pressure head to the attic spaces.

The success of the sprinkler system is dependent on a mobilized operator to turn on a pump at a remote site.

In the event of a building fire there is insufficient water pressure to reliably utilize the sprinkler system. Domestic and fire water storage are combined without controls to ensure that sufficient fire water reserve is available. The combined fire and domestic water storage is being utilized by consumers outside of the control of the clinic facility.

Additional investigation and modification of the supply and distribution system is warranted and should consider a return line from the tank with a connection to a reliable city system, automated fill control of the tank from the existing connection, float and/or pressure control to maintain fire water reserve within the tank dedicated to the clinic, and a local fire water pressure pump at the clinic. As an interim measure, suggest installation of an electric fire water pressure pump in the clinic ASAP.

III. Infectious control

A. Isolation room

The isolation exam room in the primary care suite was observed to be at a neutral pressure and should be clearly negative with respect to the corridor. The room may be misbalanced. There are two complicating factors that could contribute to the current condition: there have been numerous ‘tweaks’ to the air distribution system adjusting supply fan speeds to enhance user comfort that could overwhelm the exhaust air from the room and its intended balance, also the main make up (fresh air) supply fan for the building had not in service for several days.

With the air distribution system fully functional the room should be rebalanced. When system modifications are made or when the main supply air handler is offline the negative pressure of the room should be confirmed. If the space cannot be maintained negative clinical staff should be notified and a door placard utilized to indicate that the space is not currently available as an isolation room.

B. General pressurization and dust control

The main building make up (fresh air) supply fan was being repaired during the site visit and had been out of service for several days. With this fan off-line the overall building pressure was significantly negative (ideally it would be slightly positive as a buffer to the infiltration of unconditioned outside air).
Without this controlled pathway for conditioned and filtered make up air the building fresh air demand is being drawn from the outside through every available opening; during occupied times primarily through entry doors.

With the unfiltered outside air (as much as 12,000 cubic feet per minute) being drawn into the building comes entrained dust, pollen, insects, etc. that would otherwise be filtered out or buffered by the building being positively pressurized with respect to the outside. The intended air pressure relationships between ‘clean’ and ‘dirty’ spaces throughout the building are also compromised.

Although active housekeeping throughout the facility is evident, extended periods of unfiltered outside air can overwhelm their efforts and will deposit dust on unexpected surfaces. Substantial dust accumulations were observed on all horizontal surfaces in departments close to the main entry [Picture A-10].

This single make up fan is critical to controlling building pressure and dust. Consider maintaining a more comprehensive spare part inventory for this fan unit and perform maintenance on the unit after normal hours with other fans off to minimize infiltration.

C. Red bag use and control

The use and control of potentially infectious waste throughout the facility was observed to be exceptional.

ELECTRICAL

I. General Observation

With regard to the aforementioned systems, the O&M staff at the Pawnee Health Care Center should be commended for their past and present efforts in providing solutions to a number of warranty issues that they encountered after occupancy of the new facility.

At the completion of building construction, a Commissioning Report was issued by the Contractor to the tribe; however, this report did not addressed the lack of important QA issues, as well as the issue of insufficient training of IHS O&M staff in the operation and maintenance of specialized medical equipment. The Contractor did commit his subcontractors to help resolve some of these warranty issues.

However, after the warranty period expired, and the contractor was paid, the unresolved warranty issues became deficiencies that the M&O staff has taken upon themselves to improve them. Accomplishing this challenge will require some time and the use of the Pawnee HCC M&I funds. This will be required if the objective is to make a sustainable building of the new Pawnee HCC.

The main reason for the deficiencies encountered in the aforementioned systems during the Pawnee POE appears to be insufficient QA surveillance of the contractor’s performance.

The new HCC is presently operated by IHS; however it was built in a fast track by the Tribe under a 638 Contract. My review of the specs and plans for electrical, information technology systems, and special systems, revealed that the Project A/E produced construction documents that followed the IHS A/E Guidelines. Most of the written specs from Section 16000 have specific QA instructions for insuring that the electrical power systems and other special systems in the new Pawnee HCC be built using adequate materials and products. These systems were designed to be installed following relevant national and local building codes for insuring the safety of the building occupants.

As to why QA surveillance of the project contractor's performance was insufficient or unavailable, will have to be determined within the tribal organization members directly involved in the construction of the building, or perhaps within the IHS staff that participated in negotiations with the Tribe.

II. Main Electrical Service Grounding

A. General Observations/Design Criteria

No documentation of the electrical system grounding test to be performed per Specs 16450.3.D was found.

If a written and signed record of having performed this test by the Contractor does not exist, then a conclusion would be that perhaps this grounding test did not get accomplished. This situation would create a potential liability for IHS, because improperly grounded medical equipment could cause electrical shock to patients. HCC M&O staff could also be in jeopardy.

The absence of adequate main electrical service grounding could also originate power quality problems throughout the HCC. During the Department's Presentations, the ITS representative mentioned that poor electrical power quality has been the source of many of the ITS equipment failures and problems.

B. Comments/Recommendations

Have a specialist perform the electrical power main service ground per the Fall of Potential method described in IEEE Standard 141.

III. Main Electrical Service Entrance

A. General Observations/Design Criteria

Electrical power is provided to the Pawnee HCC by the Grand River Dam Authority. This utility furnishes power to the HCC by means of a dry-type 750 kVA, 480/277 volts, pad-mounted transformer. The service feeder cable is installed underground. The main distribution panels are located in the NE corner of the Central Plant Room. [Picture E-1]. The installation of these panels was found to be non-compliant with OSHA, NEC, and NFPA 70E codes with regard to arc flash protection for O&M staff. Some main distribution panels were found lacking TVSS protection.

No documentation of electrical short circuit calculations and of protective selective coordination calculations were found in the HCC M&O records.
Records or tests that show three phase voltage balancing in each of the main distribution panels were not found.

B. Comments/Recommendations

1. Comply with OSHA, NEC and NFPA 72 regarding Arc Flash protection for O&M staff.

2. Install TVSS protection in main distribution panels.

3. Have a specialist perform short circuit calculations and selective protection coordination to set the short circuit level at all the main breakers located in each main distribution panels.

4. Measure the phase to phase voltage difference in each of the main distribution panels. A voltage difference of 5% to 10% between phases would indicate that the panels were properly loaded and electric motors will work efficiently. A voltage difference greater than 10% will require O&M staff to balance motor loads in the measured panel.

IV. Lightning Protection System

A. General Observations/Design Criteria

No QA test or calculations were found regarding the Lightning Protection System. These systems are usually installed and tested by specialized technicians.

B. Comments/Recommendations

Have a specialist from the Lighting Protection Institute certify that this system was installed correctly at the Pawnee HCC.

V. Branch Circuit Panel Boards

A. General Observations/Design Criteria

All branch circuit panel boards were found lacking TVSS protection [Pictures E-2 & E-3]. The circuit breaker schedules of a few panel boards in the attic were found to be non-corresponding to their respective as-built circuits.

All branch circuit panel boards were found to be non-compliant with OSHA, NEC, and NFPA 70E codes with regard to arc flash protection for O&M staff. Records or tests that show phase to phase voltage balancing in each of the branch circuit panel boards were not found.

B. Comments/Recommendations

1. Install TVSS protection in branch circuit panel boards.

2. Have a specialist perform short circuit calculations and protection selection coordination to set the short circuit level at all the main breakers located in all circuit branch panels.

3. Measure the phase to phase voltage difference in each of the main branch circuit panel boards that have electric motor loads. A voltage difference of 5% to 10% between phases would indicate that the panels were properly loaded and electric motors will work efficiently. A voltage difference greater than 10% will require O&M staff to balance motor loads in the measured panel.

VI. Pathways, Raceway, Conduit Infrastructure for Cabling and Wiring

A. General Observations/Design Criteria

Throughout the building attic it was found that the existing raceway infrastructure is insufficient for the proper installation of current and future low voltage cables for the following systems: telephone and data, fire alarm and HVAC controls [Pictures E-4, E-5, E-6 & E-7]. NEC requirements do not allow the supporting of cables for the aforementioned systems on ceiling tiles. This code also limits the means for routing conductors that are not properly place in a conduit or cable tray.

The dimensions of the raceway for interconnecting power and data communications cables to the new dental chairs were found unacceptable and non compliant with the NEC.

B. Comments/Recommendations

1. Install adequate cable tray per NEMA VE-2 in the attic for fire alarm, controls, IT and telecommunications cabling. Reroute cables adequately. Make cable installation comply with NEC.

2. Install adequate raceway to interconnect power, telephone and ITS required for dental chairs incorporated with digital X ray systems. An option might be core drilling floor and installing raceway under the dental chair.

VII. Electrical Power Conductor

A. General Observations/Design Criteria

No documentation was found regarding power conductor insulation test per Contract Specification 16120.3.01.C.

B. Comments/Recommendations

Perform spot checks of electrical power conductor insulation as directed in Contract Specification 16120.3.01.C.

VIII. Electrical Power Receptacles and GFCI's

A. General Observations/Design Criteria

Throughout the HCC walls it was noticeable the existence of several power receptacles exhibiting cracked plates. The hospital grade quality of these receptacles is questionable.

Some patient waiting areas and rooms for the treatment of children were missing the installation of tampered proof power receptacles.

Many power receptacles installed by the Contractor had to be relocated because they were covered by office furniture or by appliances, or they were too far away to power clinical equipment and computers. This could be attributable to the absence of Project QA and poor coordination between project designers, contractor, subcontractors, office equipment providers, medical equipment providers and HCC O&M and staff.

GFCIs in men's and women's bathrooms are located far away from the bathroom's sinks. GFCIs found missing in X-Ray room sink, in Dental Areas, and in Care Room at Public Health.

B. Comments/Recommendations

1. Replace cracked power receptacle plates with hospital grade plates.

2. Install tamper proof power receptacles in patient waiting areas as well as in patient rooms for the treatment of children.

3. Perform new power receptacle moves and changes using adequate Wiremold Raceway with independent sections for power and ITS/telephone services.

4. Use Wiremold Raceway to install GFCIs in bathrooms per NEC then convert existing bathroom GFCIs to regular power outlets.

5. Install GFCIs missing in X-Ray room sink, Dental Areas, and Care Room at Public Health

IX. Interior Lighting

A. General Observations/Design Criteria

Wiring of lighting fixtures above ceiling looks like it was not done by a licensed electrician [Picture E-8].

Lighting of all the HCC interior spaces allocated to halls, offices and rooms for patients was found to be adequate [Picture E-9]. However, there is excessive dust accumulated in the attic [Picture E-10]. This dust filters down and also accumulates on the surface of fluorescent lamps and on the surface of each of the diffusers of light fixtures installed below the false ceiling. Dirty lamps and light fixture diffusers decrease the level of illumination designed for the HCC. Dust particles that filter from the HCC attic may also contribute to the creation of indoor air quality problems.

It was found that offices, conference rooms, restrooms and staff lounges, lack the installation of motion sensors for automatically turning light switches on and off. Installation of these sensors can help reducing electrical energy consumption when the aforementioned rooms are not in use.

Overhead lights in some areas used for testing need three way switching systems and light dimmers.

In Optometry, the Refraction Desk Machine is not hooked up to control overhead lights and instrument lights.

Documentation whether the installed lamps are energy star products was non-existent.

B. Comments/Recommendations

1. Excessive dust in the building attic shall be removed carefully.

2. Make the electrical wiring of lighting fixtures compliant with the NEC.

3. Install automatic motion sensors to control lights in offices, conference rooms, restrooms and staff lounges

4. Install three ways switching for lights in testing areas such as Optometry and others.

5. In Optometry, hook up the Refraction Desk Machine to control overhead lights and instrument lights.

X. Electrical Power Emergency Systems – Emergency Generator

A. General Observations/Design Criteria

This generator is a Class 2, Type 10 emergency generator. As defined in NFPA 110 this generator provides emergency power in a time interval of 10 seconds after a utility power failure. Per specification 16620, the 150 kVA rated generator was taken out from the old clinic and installed as an emergency unit for the new clinic. O&M staff expressed that it works well when testing it as an alternative power source for the HCC essential emergency electrical system that is comprised by the emergency life safety branch together with the emergency critical branch.

However, no documentation was found regarding engineering calculations or the criteria applied to show that the rating of the existing generator matches or exceeds the total load of the essential emergency electrical system of the new HCC. This is a requirement of NFPA 99, 4.4.1.1.9

Several Department representatives mentioned that they use equipment or instruments that require emergency power service in less than 10 seconds.

The Pawnee HHC emergency generator is located outside of the building approximately 30 feet from the north corner of the building. Picture E-11, shows that the generator is closed to an outdoor light; however, per NFPA 99, it should have a permanent task light over the top of the generator, and this light would be lit by the generator when a utility power failure occurs. Also, per NFPA 99, at least one outdoor power receptacle powered by the generator should be installed near the generator.

B. Comments/Recommendations

1. Comply with NFPA 99, 4.4.1.1.9, NFPA 110.

2. Provide UPS to all Departments that use medical equipment, instruments and computers that require emergency power services in less than 10 seconds.

3. Provide light and power outlet to generator as required by NFPA 99.

XI. Electrical Power Emergency Systems – Emergency Lights

A. General Observations/Design Criteria

Cubicles or workspaces have been rearranged in the Benefit Package and Contract Services Departments but the overhead emergency lights from former corridors have not been relocated following the new paths of egress.

No emergency lights were found where the dental chairs are located.

B. Comments/Recommendations

1. Install overhead emergency lights after rearranging cubicles in open offices.

2. Install overhead emergency lights in the rooms where dental chairs are located.

XII. Fire Alarm System

A. General Observations/Design Criteria

O&M staff expressed that this system is frequently tested and operates well. However, no documentation was found that it was initially installed and tested by a Fire Alarm certified technician.

Also no documentation was found that the final acceptance test was performed as required in NFPA 72. No documentation was found that the Contractor had submitted the NFPA 72 Inspection and Testing Form and the UL 72 certificate.

Fire Alarm control cables were found not installed per NEC [Picture E-12].

No documentation was found regarding Fire Alarm voltage drop calculations.

B. Comments/Recommendations

1. Comply with documentation required by NFPA 72 and UL Form 72. Not having this documentation is a liability for IHS.

2. Comply with NEC. Reinstall Fire Alarm control cables presently supported on ceiling tiles and fixed to other equipment and to building structures.

3. Obtain voltage drop calculations from Fire Alarm installer.

XIII. Telecommunication Systems - Telephone

A. General Observations/Design Criteria

No documentation was found that per Contract specification 16750, the cabling for these systems were installed and tested by a certified telecommunications technician, RCDD.

The telephone switch is an Alcatel Omni Switch 6600-P24 [Picture E-13]. Departments have requested the installation of additional analog phone lines to be used by their fax machines. However, presently there are not enough analog ports in the Omnistack 6148 Modules installed in the telephone rack [Picture E-14].

Telephone services cabling has been accomplished using CAT 5e UTP cable; however due to the absence of adequate cable trays along the ceilings of building corridors, the telephone cable installation was found completely untidy. In the attic, lots of CAT 5e white cables have been installed on ceiling tiles and also supported by building structure and equipment. Installers did not follow directions from Contract specification 16191.C.

The representatives of several Departments expressed that some of the telephone system features such as Caller ID, Call Forwarding and Call Parking do not work as they should.

B. Comments/Recommendations

1. In lieu of a testing document as directed by Contract specification 16750, perform random spot checks of CAT 5e cable following EIA/TIA 568 B Standard.

2. To provide additional analog telephone lines, purchase more Alcatel Omnistak Modules and install them in the telephone racks in the IT Room.

3. Comply with the NEC and EIA/TIA Standard 569 A, to properly install adequate cable trays, for CAT 5e cables used for telephone services.

4. Combat dust accumulation throughout the building attic.

5. Program telephones so that the features requested by the HCC staff may work.

XIV. Telecommunication Systems – Paging/Intercom

A. General Observations/Design Criteria

For Tribal Meetings, the Community Health representative suggested the installation of a dedicated intercom system from the outside door of this Department to where the meetings take place.

Community Health staff members who work in the field do not have a reliable communications system for establishing two-way communications systems with their peers at the HCC.

B. Comments/Recommendations

1. Install dedicated intercom system for Tribal Meetings that take place at the Community Health Department.

2. In Lab/X Ray Department install buzzer and door lock release button as requested by staff.

3. In the Lab/X Ray Department, install buzzer and door lock release button as requested by staff.

4. Install a reliable two-way communications system for the Community Health staff members who work in the field and need to establish communications with their peers in the HCC.

XV. Information Technology System

A. General Observations/Design Criteria

No documentation was found that per Contract specification 16750, the cabling for these systems were installed and tested by a certified telecommunications technician.

The HCC VLAN is comprised by the Alcatel 7700 High-speed Ethernet Switch, Dell data servers, racks, optical fiber cable backbone and CAT 6 cabling [Picture E-15].

The fiber optics cable was found installed without inner duct, and due to the absence of adequate cable trays along the ceilings of building corridors, the LAN cable installation was found completely untidy. In the attic, lots of CAT 6 blue cables have been installed on ceiling tiles and also supported by building structure and equipment [Picture E-16].

Throughout the building, the existence of excessive dust in the attic could filter down through the ceiling tiles and affect the correct functioning of IT equipment.

IT staff mentioned that electrical power quality and electromagnetic interference between the IT equipment and the utility power should be checked out. When O&M staff tests the emergency generator without their prior mentioning of this event to IT staff, the automatic transfer of power from utility power to generator power causes serious problems to the IT equipment

Computer access in portions of the facility is limited due to the lack of phone/IT connection points.

B. Comments/Recommendations

1. Per Contract specification 16750 request that Contractor furnish documentation showing that fiber optics and CAT 6 cable were installed and tested by an RCDD.

2. Comply with the NEC and EIA/TIA Standard 569 A, to properly install adequate cable trays, for CAT 5e cables used for ITS.

3. Combat dust accumulation throughout the building attic.

4. Have a specialist check power quality throughout the HCC building specially in the ITS area. Power quality levels should be as prescribed in IEEE Standards 590 AND 1250. Besides adequate UPS it might be necessary to install isolation transformers. All the utility power receptacles in the ITS area should have dedicated ground connections.

5. Install TVSS in the branch circuit panel boards that furnish power to the IT area.

6. Consider installing wireless computer access points in the areas where connectivity is limited.

XVI. Main Water Utility

A. General Observations/Design Criteria

Main water pump controls were found not to be working properly.

B. Comments/Recommendations

More efficient and reliable automatic controls need to be installed to insure the proper operation of the main water pump.

XVII. Elevators

A. General Observations/Design Criteria

Intercom in one elevator was found inoperative. This is a life-safety code issue.

B. Comments/Recommendations

This service needs to be fixed and retested.

XVIII. Building Security

A. General Observations/Design Criteria

The Pawnee HCC staff uses security cards for entering and leaving the building. There is no surveillance when the building is locked up after working hours.

B. Comments/Recommendations

Consider the installation of a CCTV for building security surveillance.

XIX. Energy Conservation mandated by EPACT of 2005

A. General Observations/Design Criteria

The O&M staff was aware of the sections that in this new law deal with energy conservation in federal buildings.
Department heads and their staff were not.
An energy conservation plan for the Pawnee HCC to comply with EPACT 2005 needs to be developed.

B. Comments/Recommendations

An energy conservation should be developed to accomplish the following items:

1. Energy use reduction of 2% per year from FY 2006 through FY 2015.

2. Install advanced electronic metering per IHS guidelines.

3. Purchase Energy Star™ products.

SUMMARY OF FINDINGS AND RECOMMENDATIONS

This section contains listings of major desirable and undesirable design features, which will be entered in the OEHE Lessons Learned website *http://www.dfpc.ihs.gov/*. Major recommendations for consideration by the Health Facilities Advisory Committee are listed below which may eventually result in changes to IHS health facility criteria.

A. Desirable Design Features

1. This facility and site development features work well overall. There is adequate signage and physical separation of the patient and service access.

2. The exterior of the PHC is attractive and has performed well in the central Oklahoma climate.

3. The entrances and vestibules are well located and adequately shield the waiting areas.

4. Layout of main mechanical room allows good access for equipment maintenance and repair.

5. The circular drive and parking supports efficient traffic flow.

6. There is good access by elevator and catwalks provided to the attic and roof areas for maintenance of equipment.

B. Undesirable Design Features

1. The gabled roof a distinct design feature has resulted in problems for the interior of the facility. The attic plenum areas directly below the roofs are not separated from the occupied spaces on the first floor. There is only a hung ceiling separating the large attic plenum from most of the 1st floor spaces. Unfortunately, this has resulted in excessive noise and dust infiltration as well as security problems in certain areas such as the Pharmacy.

2. There was concern expressed over the contractual responsibilities related to the 638 contract with the Tribe especially for the construction management and inspection. Many issues including punch list follow up and warranty items were not treated with due diligence in accordance with the contract documents. Refer to the electrical section to review the many items that were not installed with the necessary warranty and certification evidence. Evidently many items were expedited with compromises that unfortunately still are being dealt with. The contractor was finishing construction on the building and was making every effort to turn the building over to the IHS so that the health center could be placed in operation. One feature that does not have the specified warranty is the roof. A warranty on the roof is essential for the overall installation and performance during the life of the roof.

C. Recommendations

1. All occupied program space needs to be enclosed by a structural ceiling or roof and should not be separated from a large volume of attic space by only a “hung lay-in ceiling”. Excessive dust, noise as well as security issues are apparent on the first floor of the PHC.

2. Better attention during design should be paid to building security, both interior (limiting after-hours access to certain areas) and exterior entrances and storage areas. A card access system is recommended for all entrances except the main public entrances.

3. Where carpet is used; it is suggested that carpet tiles be installed for ease of maintenance where stains and damage affect certain areas.

4. Carpet cleaning equipment has increased in size in recent years and will not fit satisfactorily into janitor closets. Recommend that size and function of these closets be reviewed.

5. In this climate it is recommended that islands and grassed area in the parking lot be eliminated for ease of maintenance.

6. The solid waste storage area should be set up with a dedicated fenced slab.

7. The altitude valve for the water tank shut off was not well maintained and kept free of silt thereby causing the tank to spill water out the overflow.

8. Other problems of low flow were experienced where maximum demand was experienced (generally on Monday A.M.) This has resulted in low pressure and inability of the toilets to flush. Firefighting pressure remains questionable also. It is recommended that tank water levels be monitored closely and an auxiliary emergency fire pump be purchased and installed.

9. The isolation room in the general clinic should be under negative air pressure but only indicated that neutral pressure. Many adjustments have been made in the clinic air supply and may have influenced the ability to maintain negative pressure.

10. Warranty items including certification of critical code requirements were observed in many areas such as main service grounding and QA test for lightning protection.

11. GFCI protection for many sink areas in dental, x-ray exam room and the P. H. care room.

12. The auto-transfer switch for the emergency generator when activated instantly causes serious problems for the IT systems.

13. Major medical and dental departments should require staff changing and lockers within the department confines.

14. Provide uninterruptible power supply for the laboratory to provide continuity of results and protection of sensitive equipment.

15. Automated dispensing and supply systems (Pixus, cart storage/supply, etc.) must be identified early in the design phase so that the respective departments and furnishings can be properly designed and integrated with the automated system.

16. All new IHS Radiology Departments should be designed for digital imaging even if wet processing is still needed. The Picture Archiving Computer System (PACS) requires many specific planning considerations for the system to work throughout the hospital. This includes space for double monitors, and associated services for power and increased HVAC loads.

17. Security is a major concern at all IHS health facilities, especially post “911” and extensive security cameras, both outside and inside the PHC, monitored from a central security office is most desirable.

18. Install 600 mm cable tray system above suspended ceiling system of each hallway. Present data/communication cabling lacks a logical means of routing, which complies with present National Electric Code requirements (Article 300-23). Also, the IT staff indicated a preference for all computer cables to be installed above ceilings rather than using a raised floor system.

D. Departmental RRM and Staffing Issues

1. A security RRM has been developed and a security template is being developed for incorporation in all new projects.

2. Consider need for receptionists for ambulatory and ancillary services.

3. Include staff considerations for case management.

4. IT management staff needs to be considered for all new facilities.

5. Staff demands have increased for billing and related activities under the business model.

6. Address service deficiencies in areas such health education, physical therapy and audiology by hiring staff included in the RRM.

APPENDIX A

BUILDING SPACE COMPARISON

#	Department Name	Net Area	Net to Gross	Gross Area	Net Area	Gross Area	Net Area	Gross Area
	Administration							
	Administration	130.00	1.40	182.00	132.40		1.85%	
	Business Office	167.00	1.40	233.80	82.90		-50.36%	
	Health Information Management	146.00	1.25	182.50	146.00		0.00%	
	Information Management	69.00	1.20	82.80	69.00		0.00%	
	Subtotal	512.00		681.10			-100.00%	
	Ambulatory							
	Audiology	64.30		81.00	64.20		-0.16%	
	Dental Care	418.80		653.00	418.80		0.00%	
	Eye Care	128.20		163.00	128.20		0.00%	
	Primary Care	499.00		734.00	499.40		0.08%	
	Subtotal	1,046.00		1,631.00	1,110.60		6.18%	
	Ancillary							
	Diagnostic Imaging	148.70		167.00	146.20		-1.68%	
	Laboratory	109.10		121.50	108.95		-0.14%	
	Pharmacy	229.00		252.00	229.90		0.39%	
	Physical Therapy	377.50		482.00	377.50		0.00%	
	Subtotal	864.30		1,022.50	862.55		-0.20%	
	Behavioral							
	Mental Health	74.00	1.40	103.60	72.50		-2.03%	
	Social Work	28.00	1.40	39.20	26.90		-3.93%	
	Subtotal	102.00		142.80	99.40		-2.55%	
	Facility Support							
	Clinical Management	39.10		42.00	39.10		0.00%	
	Facility Management	81.60		130.00	81.60		0.00%	
	Subtotal	120.70		172.00	120.70		0.00%	
	Preventive							
	Environmental Health	107.00	1.40	149.80	107.00		0.00%	
	Health Education	51.00	1.40	71.40	51.50		0.98%	
	Public Health Nursing	135.00	1.40	189.00	135.40		0.30%	
	Public Health Nutrition	17.00	1.40	23.80	15.90		-6.47%	
	Subtotal	310.00		434.00	309.80		-0.06%	
	Support Services							
	Education & Group Consultation	82.20		93.80	82.05		-0.18%	
	Employee Facilities	120.80	1.20	144.96	120.80		0.00%	
	Housekeeping & Linen	53.50		58.80	52.80		-1.31%	
	Property & Supply	149.70		160.00	149.70		0.00%	
	Public Facilities	101.00	1.20	121.20	87.00		-13.86%	
	Subtotal	507.20		578.76	492.35		-2.93%	
	Additional Services							
	Benefit Package	41.00	1.35	55.35	136.20		232.20%	
	Child Behavior Unit	31.00	1.35	41.85	38.10		22.90%	
	Subtotal	72.00		97.20	174.30		142.08%	

Total Department Gross Area	4,759.4
Department to Floor Multiplier (20%)	951.9
Total Floor Gross Area	5,711.2
Major Mechanical Space (12%)	685.3
Total Building Gross Area*	6,396.6

*Approved per PJD/POR and subsequent amendments

APPENDIX B

MISCELLANEOUS PHOTOGRAPHS

A-1 Main Entrance

A-2 Side of Facility

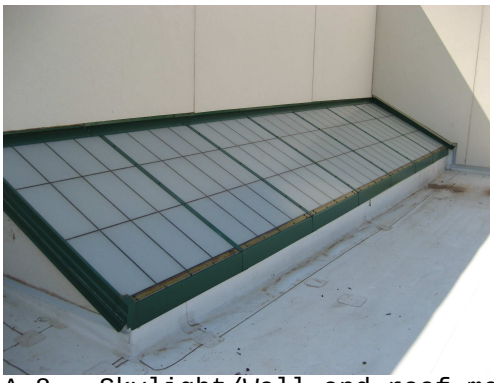
A-3 HCC Multiple Roofs

A-4 Skylight

A-5 Interstitial Space

A-6 Monument at Entrance

A-7 Roof/Wall Flashing repairs



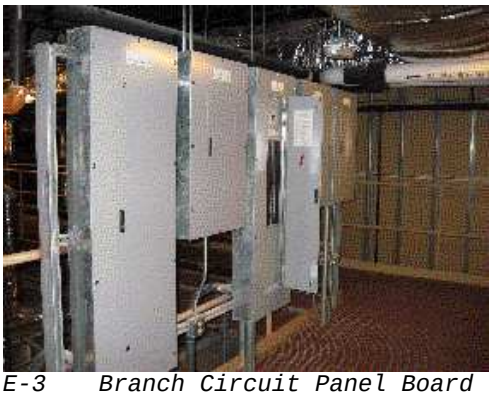
A-8 Skylight/Wall and roof membrane

A-9 Community water storage tank

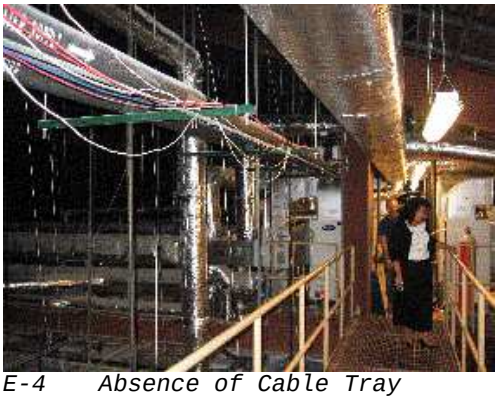
A-10 Dust accumulation

E-1 Main electrical Service Entrance

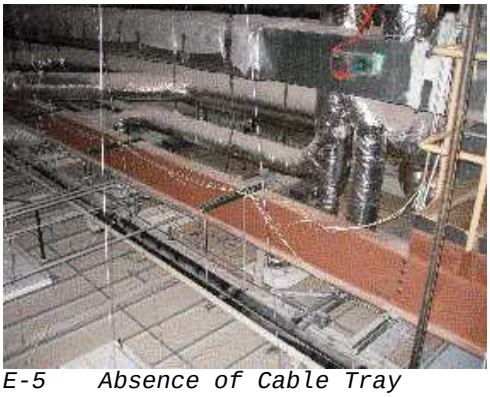
E-2 Branch Circuit Panel Boards



E-3 Branch Circuit Panel Board

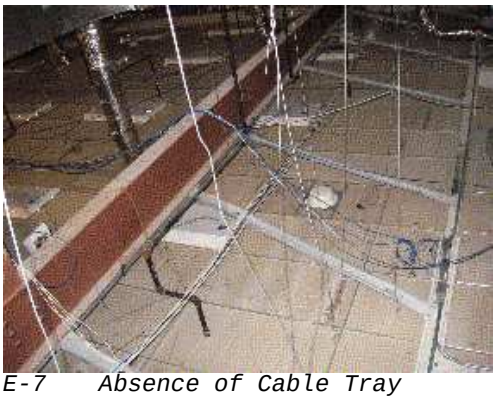


E-4 Absence of Cable Tray



E-5 Absence of Cable Tray

E-6 Absence of Cable Tray



E-7 Absence of Cable Tray

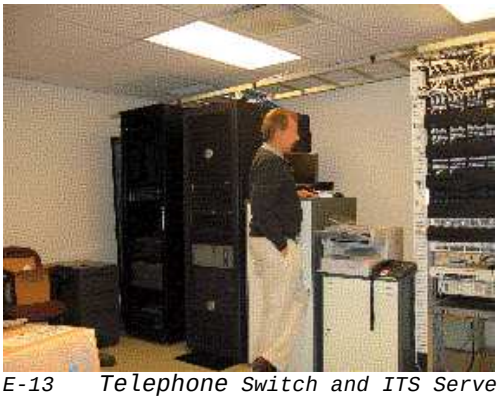
E-8 Wiring of Lighting Fixtures

E-9 Interior Lighting

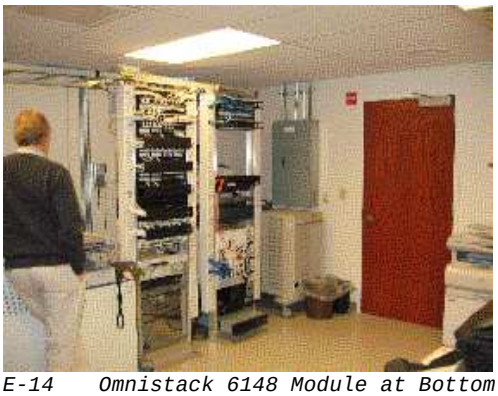
E-10 Excessive Dust Accumulation in Attic

E-11 Emergency Generator

E-12 Fire Alarm Control Cables not installed per NEC



E-13 Telephone Switch and ITS Server



E-14 Omnistack 6148 Module at Bottom of Telephone Rack

E-15 Data, CAT 6 Cabling Hub

E-16 Attic, Cable Entrance to ITS Rack at ITS Racks